UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,619	03/31/2001	Joshua T. Goodman	1018.114US1	6968

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WESTMAN CHAMPLIN (MICROSOFT CORPORATION)
SUITE 1400 - INTERNATIONAL CENTRE
900 SECOND AVENUE SOUTH
MINNEAPOLIS, MN 55402-3319

EXAMINER
WOZNIAK, JAMES S

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 11/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/823,619	GOODMAN, JOSHUA T.
	Examiner	Art Unit	
	James S. Wozniak	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 September 2005</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-44</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-44</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>31 March 2001</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   In response to the office action from 3/10/2005, the applicant has submitted an amendment, filed 9/2/2005, amending claims 1, 3-6, 8, 10-11, 13-14, 21, 24, 26-27, 34, 41, and 42-43, while arguing to traverse the art rejection based on the amended limitations *(Amendment, pages 12-15)*. The applicant's arguments have been fully considered but are moot with respect to the new grounds of rejection, necessitated by the amended claims, in view of King et al *(U.S. Patent: 5,953,541)*.

2.   In light of the applicant's arguments directed towards the obvious-type double patenting rejection *(Amendment, page 12)*, the examiner has withdrawn the obvious-type double patenting rejection.

3.   The applicant has not officially challenged the official notice taken with respect to claims 16 and 29 regarding the use of a pruning method utilizes one of a count-cutoffs, Rosenfeld, or Stolcke approach in response to the prior office action, thereby making the use of such pruning methods the applicant's admitted prior art.

Claim Objections

4.   **Claims 20, 33, and 40** are objected to under 37 CFR 1.75(c), as being of improper

dependent form for failing to further limit the subject matter of a previous claim. Applicant is

required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent

form, or rewrite the claim(s) in independent form.

5.   The infringement test for determining a proper dependent claim as per the MPEP 608.01

(n), Section III, states that a such a claim cannot conceivably be infringed by anything that would

not also infringe the claim it references. In this case, a computer memory medium would not

infringe the method steps of Claims 1, 27, and 34, since the memory medium *itself* never actually

performs any of the active steps respectively required by Claims 1, 27, and 34. In other words

possession of such a memory medium would infringe Claims 20, 33, and 40, but not Claims 1,

27, and 40.

Claim Rejections - 35 USC § 103

6.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

7.   **Claims 1-8, 14, 20, and 34-44** are rejected under 35 U.S.C. 103(a) as being unpatentable

over Skiena et al *(U.S. Patent: 5,828,991)* in view of King et al *(U.S. Patent: 5,953,541)*.

With respect to **Claim 1**, Skiena discloses:

Receiving key input corresponding to the entered word and at least one of a left context and a right context *(Col. 5, Lines 1-17, Fig. 3; and Fig. 12, Elements 30 and 32)*;

Determining a list of possible words corresponding to the key input for the entered word, wherein each listed word is in a vocabulary or a cache *(alternative word choices for a particular text entry, Col. 11, Lines 20-43; and word list vocabulary database, Col. 7, Lines 56-64)*; and

Using a language model to rank the listed words based on one or more of the at least one of the left context and the right context of the key input *(ranking alternative word choices for subsequent selection according to a probability, Col. 11, Lines 30-47)*.

Skiena does not specifically suggest the ability to train language data based on words entered into a cache, however King teaches such a language data training method *(vocabulary module, Col. 16, Lines 44-56; and Col. 26, Lines 5-49)*.

Skiena and King are analogous art because they are from a similar field of endeavor in text disambiguation. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Skiena with the ability to train language data based on words entered into a cache as taught by King in order to allow a user to add custom vocabulary that is stored in a structure that reduces processing complexity *(King, Col. 6, Lines 24-56)*.

With respect to **Claims 2**, Skiena shows:

The reduced keypad is a numeric keypad *(Fig. 2)*.

With respect to **Claim 3**, Skiena recites:

The key input has at least the left context, and the word corresponding to the key input is

determined based on the left context of the key input *(Col. 9, Lines 35-50, and Fig. 7)*.

With respect to **Claim 4**, Skiena discloses:

The key input has at least the right context, and the word corresponding to the key input

is determined based on the right context of the key input *(Col. 9, Lines 35-50, and Fig. 7)*.

With respect to **Claim 5**, Skiena recites:

The key input has both the left context and the right context, and the word corresponding to the

key input is determined based both on the left context and the right context of the key input *(Col.*

9, Lines 35-50, and Fig. 7).

With respect to **Claims 6 and 7**, Skiena recites:

The language model comprises using an n-gram model, wherein the n-gram model is a bigram

model *(Col. 10, Lines 12-14)*.

With respect to **Claim 8**, King discloses:

Using a cache model *(Col. 10, Lines 17-33)*.

With respect to **Claim 14**, Skiena discloses:

The key input has both the left context and the right context and has a plurality of number

sequences where each sequence corresponds to a word, the plurality of words corresponding to

the key input determined by using language model based both on the left context and the right

context of the key input *(Col. 9, Lines 35-50, and Figs. 3 and 7)*.

With respect to **Claim 20**, Skiena further discloses method implementation as a program

on a computer readable memory *(Col. 4, Lines 48-55)*.

Claim 34 contains subject matter similar to Claim 1, and thus, is rejected for the same reasons.

With respect to Claim 35, Skiena shows:

A display on which the at least one of the left context and the right context, and the word corresponding to the key input, are displayed *(Fig. 1, Element 20).*

With respect to Claim 36, Skiena shows:

The apparatus is a telephone *(Fig. 1, Element 10).*

With respect to Claims 37-38, King further teaches a cellular phone for use with text disambiguation *(Col. 1, Lines 41-45).*

With respect to Claim 39, King teaches a handheld device for use with text disambiguation *(Fig. 4B).*

Claim 40 contains subject matter similar to Claim 20, and thus, is rejected for the same reasons.

Claims 41-43 contain subject matter similar to Claims 3-5, respectively, and thus, are rejected for the same reasons.

Claim 44 contains subject matter similar to Claim 8, and thus, is rejected for the same reasons.

8.   Claims 9, 15, 17-19, 27-28, and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skiena et al in view of King et al, and further in view of Bangalore et al *(U.S. Patent: 6,415,248).*

With respect to **Claim 9**, Skiena teaches the word disambiguation method utilizing language models, as applied to Claim 1. Skiena does not specifically suggest the use of a compressed language model, however Bangalore discloses:

The language model comprises a compressed language model *(Col. 6, Lines 44-65)*.

Skiena, King, and Bangalore are analogous art because they are from a similar field of endeavor in linguistic text processing. Thus, it would have been obvious to a person of ordinary skill in the art, at the time of invention, to modify the teachings of Skiena in view of Bangalore with the use of a pruned language model as taught by Bangalore in order to improve text processing efficiency by considering only those clusters having a maximum lexical significance within the compressed model instead of an entire tree structure *(Bangalore, Col. 6, Lines 38-65)*.

With respect to **Claim 15**, Bangalore further discloses:

Smoothing an uncompressed language model *(Col. 3, Lines 52-61)*; and

Pruning the uncompressed language model to yield the compressed language model *(Col. 6, Lines 44-65)*.

With respect to **Claim 17**, Bangalore further discloses:

Determining a normalization factor for each word in the uncompressed model only prior to pruning *(Col. 5, Lines 22-38, and Col. 9, Lines 19-22)*.

With respect to **Claim 18**, King recites:

Pruning the uncompressed language model accounts for ambiguous words in the uncompressed model *(Col. 14, Lines 9-63, and Fig. 9A)*.

With respect to **Claim 19**, King additionally recites:

Pruning the uncompressed language model accounts for an effect of the pruning on key

input accuracy *(Col. 14, Lines 9-63)*.

Claim 27 contains subject matter similar to Claims 1, 9, and 15, and thus, is rejected for

the same reasons.

Claim 28 contains subject matter similar to Claim 2, and thus, is rejected for the same

reasons.

Claim 30 contains subject matter similar to Claim 17, and thus, is rejected for the same

reasons.

Claim 31 contains subject matter similar to Claim 18, and thus, is rejected for the same

reasons.

Claim 32 contains subject matter similar to Claim 19, and thus, is rejected for the same

reasons.

Claim 33 contains subject matter similar to Claim 20, and thus, is rejected for the same

reasons.

9.   **Claims 10-13 and 21-26** are rejected under 35 U.S.C. 103(a) as being unpatentable over

Skiena et al in view of King et al, and further in view of Gilai et al *(U.S. Patent: 6,018,736)*.

With respect to **Claim 10**, Skiena in view of King teaches the word disambiguation

method utilizing language models and context information, as applied to Claim 1. Skiena in

view of King does not specifically suggest a step of adding word-probability pairs to an array

and sorting said array in decreasing probability order, however Gilai discloses such method steps

(Col. 7, Lines 10-35).

Skiena and Gilai are analogous art because they are from a similar field of endeavor in

text disambiguation. Thus, it would have been obvious to a person of ordinary skill in the art, at

the time of invention, to modify the teachings of Skiena with the steps of adding most likely

word-probability pairs to an array and ordering said array in decreasing probability order as

taught by Gilai in order to provide more efficient text disambiguation by only sorting and

presenting a most likely set of word probability pairs for presentation to a user for the selection

of an appropriate word from an organized list *(Gilai, Col. 7, Lines 10-65)*.

With respect to **Claim 11**, Skiena in view of King, and further in view of Gilai teaches

the he word disambiguation method utilizing language models, context information, and an

ordered list of most likely word-probability pairs, as applied to Claim 10. Skiena further teaches

the bigram model as applied to Claim 7, while King additionally teaches the cache model as

applied to Claim 8.

With respect to **Claim 12**, Gilai additionally discloses:

For each word in the vocabulary that is consistent with the key input as an initial part of

the word, determining a probability of the word given the left context *(taught by Skiena with*

respect to Claim 1), and, upon determining that the probability is greater than a greatest

probability so far determined, setting the greatest probability to the probability and a greatest

probability word associated with the greatest probability to the word *(Col. 7, Line 46- Col. 8,*

Line 9, and Col. 11, Line 60- Col. 12, Line 12, and Fig. 2);

Upon determining that the greatest probability is at least a number of times greater than a

word of a first word-probability pair of the array of word-probability pairs, inserting the greatest

probability word associated with the greatest probability and the greatest probability as a new

first word-probability pair before the first word-probability pair within the array *(Col. 7, Line 46-*
Col. 8, Line 9, and Col. 11, Line 60- Col. 12, Line 12, and Fig. 2*)*.

Claim 13 contains subject matter similar to Claim 11, and thus, is rejected for the same
reasons.

Claim 21 contains subject matter similar to Claims 1 and 10, and thus is rejected for the
same reasons. Skiena further discloses selecting a word-probability pair having the greatest
probability *(Col. 11, Lines 52-57)* and method implementation as a program on a computer
readable memory *(Col. 4, Lines 48-55)*.

Claim 22 contains subject matter similar to Claim 2, and thus, is rejected for the same
reasons.

Claim 23 contains subject matter similar to Claim 10, and thus, is rejected for the same
reasons. Also Gilai further discloses selecting a highest ranked word-probability pair as
corresponding to an input text *(Col. 8, Lines 5-9)*.

With respect to **Claim 24**, Skiena in view of King, and further in view of Gilai teaches
the word disambiguation method utilizing language models and context information, as applied
to Claim 10, while Gilai additionally discloses a candidate box featuring the most likely word
probability pairs *(Col. 7, Lines 10-65)*.

With respect to **Claim 25**, Gilai further discloses:

For each word in the vocabulary that is consistent with the key input as an initial part of
the word, determining a probability of the word given the left context *(taught by Skiena with*
respect to Claim 1), and, upon determining that the probability is greater than a greatest
probability so far determined, setting the greatest probability to the probability and a greatest

probability word associated with the greatest probability to the word *(Col. 7, Line 46- Col. 8,*

Line 9, and Col. 11, Line 60- Col. 12, Line 12, and Fig. 2) ;

Upon determining that the greatest probability is significantly more likely than a word of

a first word-probability pair of the array of word probability-pairs, adding the greatest probability

word associated with the greatest probability and the greatest probability as a new first word-

probability pair to the array *(Col. 7, Line 46- Col. 8, Line 9, and Col. 11,* Line 60- Col. 12, Line

12, and Fig. 2).

With respect to **Claim 26**, Skiena in view of teaches the word disambiguation method

utilizing language models and context information, as applied to Claim 1, while Gilai teaches the

greatest probability determination method as applied to Claim 25.

10.   **Claims 16 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over Skiena

et al in view of King et al, further in view of Bangalore et al, and yet further in view of the

applicant's admitted prior art.

With respect to **Claims 16 and 29**, Skiena in view of King, and further in view of

Bangalore teaches the word disambiguation method utilizing compressed language models, as

applied to Claims 9, 15, and 27. Although Skiena in view of King, and further in view of

Bangalore does not specifically suggest that the pruning method utilizes one of a count-cutoffs,

Rosenfeld, or Stolcke approach, however it is the applicant's admitted prior art that it would be

obvious to one of ordinary skill in the art, at the time of invention to utilize one of the

aforementioned specific pruning methods in the pruning process disclosed by Bangalore since all

three methods are well-known, commonly used, and the means for implementation are readily

available. Therefore, for the benefit of implementing a readily available and well-known

pruning method, it would have been obvious to one of ordinary skill in the art, at the time of

invention, to modify the teachings of Skiena in view of King, and further in view of Bangalore

with one of the previously mentioned pruning methods.

Conclusion

11.   Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this

final action.

12.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure:

Morimoto et al *(U.S. Patent: 6,789,057)*- teaches a method for updating a language
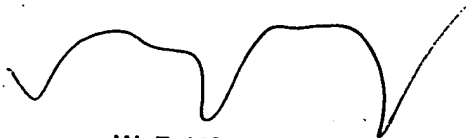
dictionary cache.

Robinson et al *(U.S. Patent: 6,801,190)*- teaches a method for word-level disambiguation

utilizing a reduced keyboard.

13.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to James S. Wozniak whose telephone number is (571) 272-7632.

The examiner can normally be reached on M-Th, 7:30-5:00, F, 7:30-4, Off Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

W. R. YOUNG
PRIMARY EXAMINER

James S. Wozniak
10/6/2005